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10/575,890

08/16/2006

Walter Demuth

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EXAMINER

ROSATI, BRANDON MICHAEL

ART UNIT

PAPER NUMBER

3744

MAIL DATE

DELIVERY MODE

12/21/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

| | | | |
|------------------------------|--------------------------------------|--------------------------------------|--|
| Office Action Summary | Application No. 10/575,890 | Applicant(s) DEMUTH ET AL. | |
| | Examiner BRANDON M. ROSATI | Art Unit 3744 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 September 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 and 33 is/are pending in the application.
- 4a) Of the above claim(s) 11 and 18-23 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12-17, 24-31, and 33 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is in response to the amendment filed on 9/30/2010. Currently, none of the claims have been amended.

Claim Objections

2. Claims 1-10, 12, 13, and 24-28 are objected to because of the following informalities:

In claim 1, line 10, the word “the” should be inserted before the phrase “the housing casing” so as to make grammatical sense. Appropriate correction is required.

Claims 2-10, 12, 13, and 24-28 are objected to as being dependent from an objected to independent claim.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-7, 10, 12-15, 24-26, 29-31, and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Demuth et al. (DE 10260030) in view of Shohei (JP 2000081289 A).

Regarding claims 1 and 29, Demuth et al. disclose in Figure 1, all the claimed limitations including a heat exchanger having a block which has pipes (2) on which a first and second medium can flow on respective sides, having flow ducts (4), and pipe ends, end pieces (combination of (8, 12, and 16) and (24, 28, and 30), each having a base plate (8 and 24), a diverter plate (12 and 28) and a cover plate (16 and 30), as well as an inlet and outlet chamber (20 and 21). It is noted that the phrases “for a motor vehicle,” “being possible to conduct the first medium from the inlet chamber to the outlet chamber to the outlet chamber through the flow ducts,” and “can flow on the secondary side” are statements of intended use and the device is

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capable of performing the function. Demuth et al. do not disclose a housing casing surrounding the pipes having an inlet and outlet, the open ends of the housing casing being closed by the first end piece and the second end piece. However, Shohei disclose in Figures 5 and 6, a heat exchanger which has a housing (see area (19)) which surrounds pipes and its open ends are closed by first and second end pieces (16 and 18). Hence, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the teachings of Demuth et al. with the housing casing of Shohei because this would allow for the heat exchange unit to be a self contained unit having the benefit of allowing the heat exchanger to utilize two liquids as fluids instead of being limited to gas. It is noted that any two mediums could be utilized including two gases and the addition of the housing would not preclude this from occurring.

Regarding claim 2, Demuth et al. disclose in Figure 1, flat pipes (2). It is noted that claim 2 contains a product by process limitation (i.e. extruded). Where a product by process claim is rejected over a prior art product that appears to be identical, although produced by a different process, the burden is upon the applicants to come forward with evidence establishing an unobvious difference between the two. See *In re Marosi*, 218 USPQ 289 (Fed. Cir. 1983)

Regarding claim 3, Demuth et al. disclose in Figure 1, each pipe having a plurality of flow ducts (4).

Regarding claim 4, Demuth et al. disclose in Figure 1, the heat exchanger block having two end pieces (combination of (8, 12, and 16) and (24, 28, and 30))

Regarding claim 5, the combined teachings of Demuth et al. and Shohei disclose the housing. It is noted that, when in combination with Demuth et al., the housing would be between the end pieces. Further, it would have been obvious to one of ordinary skill to position the

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housing between the two end pieces since this is the region of the second fluid and thus it would allow for the fluid to easily contained by having the housing positioned between the two end pieces.

Regarding claim 6, Demuth et al. disclose in Figure 1, two plates of the end piece are integral.

Regarding claim 7, Shohei disclose in Figure 5 and 6, a housing. Although the specific material it (i.e. metal) is not mentioned, it is obvious and well known to utilize a metal housing since metal is often used in heat exchangers because of its good heat transfer characteristics. Further, it is obvious to use a metal housing as evidenced by the previously used piece of prior art, Carpentier (U.S. 2001/0050166 A1).

Regarding claim 10, Shohei disclose in Figure 5 and 6, a housing (1) which has an inlet (13) and outlet (11) arranged on opposite sides of the housing.

Regarding claim 12, Shohei disclose in Figure 5 and 6, a housing (1) which has an inlet (13) and outlet (11) arranged on opposite ends of the housing.

Regarding claim 13, the combined teachings of Demuth et al. and Shohei disclose distributor and collector chambers (regions immediately inside the inlet and outlet) (see Shohei Figure 5 and 6).

Regarding claims 14 and 30, Demuth et al. disclose in Figure 1, corrugated pieces of sheet metal (i.e. fins) (7) arranged between the pipes. It is noted that although Demuth shows tubes and fins running in the vertical direction, nothing in the reference prevents the structure from being utilizes in a horizontal configuration.

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Regarding claim 15, Shohei disclose in Figure 5, 6, and 8, corrugated pieces of sheet metal (i.e. fins) (see Figure 8) having a longitudinal extent corresponding to the inlet and outlet.

Regarding claim 24, Shohei disclose in Figure 5, 6, and 8, ribs or inserts which transverse ducts for the second medium (see Figure 8).

Regarding claims 25 and 26, the combined teachings of Demuth et al. and Shohei disclose all the structural limitations of the claims. The phrases "configured for a single flow on the primary side" (as per claim 25) and "can be configured for a dual flow or more on the primary side" (as per claim 26) are statements of intended use and the device is capable of performing the functions. The applicant should be reminded that a recitation with respect to the manner in which a claimed apparatus is intended to be employed does not differentiate the claimed apparatus from a prior art apparatus satisfying the structural limitations of the claims, as is the case here.

Regarding claim 31, the combined teachings of Demuth et al. and Shohei disclose all the structural limitations of the claim including the length of the corrugated pieces (7) being less than a distance from the end plate to the second end plate (Figure 1 of Demuth et al.).

Regarding claim 33, the combined teachings of Demuth et al. and Shohei disclose all the structural limitations of the claim including the housing contacting the first end piece and the second end piece and extending from the first end piece to the second end piece (see Shohei Figure 5).

5. Claims 16 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Demuth et al. (DE 10260030) in view of Shohei (JP 2000081289 A) in further view of Carpentier (U.S. Pub. No. 2001/0050166 A1).

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Regarding claim 16, the combined teachings of Demuth et al. and Shohei disclose all the limitations of the claim except the sheet metal being in a rectangular shape. However, Carpentier disclose in Figure 1, corrugated pieces of sheet metal (i.e. fins) (see Figure 3) which are rectangular in shape. Hence, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the combined teachings of Demuth et al. and Shohei with the rectangular sheet metal of Carpentier because this would help to vary the flow characteristics inside the device (i.e. velocity, etc...) which would increase the overall amount of heat transfer.

Regarding claim 17, Carpentier disclose in Figure 1, corrugated pieces of sheet metal (i.e. fins) (see Figure 3) which are embodied in the form of a parallelogram and leave an approximate triangular inflow and outflow region between the pipes.

6. Claims 8 and 9 rejected under 35 U.S.C. 103(a) as being unpatentable over Demuth et al. (DE 10260030) in view of Shohei (JP 2000081289 A) in further view of Hayashi et al. (U.S. Pub. No. 2003/0019616 A1).

Regarding claim 8, the combined teachings of Demuth et al. and Shohei disclose all the claimed limitations except the casing being connected by solder. However, Hayashi discloses a heat exchanger in which the parts are connected together by soldering (Paragraphs [0030]-[0033]). Hence, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the combined teachings of Demuth et al. and Shohei with the soldering of Hayashi et al. because solder is well known and often used in heat exchanger construction so as to form a fluidly tight heat exchanger and reduce the risk of failure.

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Regarding claim 9, Hayashi et al. disclose in Figure 3B a housing which is rectangular in cross section having 4 sides.

7. Claims 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Demuth et al. (DE 10260030) in view of Shohei (JP 2000081289 A) in further view of Hirao et al. (U.S. Patent No. 6,237,357 B1).

Regarding claim 27, the combined teachings of Demuth et al. and Shohei disclose all the claimed limitations including utilizing two fluids, but not the first medium being a refrigerant which can operate in dual phase. However, Hirao et al. disclose a heat exchanger which utilizes refrigerant as a fluid and operated in a dual phase (Column 1, line 63- Column 2, line 9). Hence, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the combined teachings of Demuth et al. and Shohei with the refrigerant of Hirao et al. because this is a well known type of refrigerant used in heat exchangers and having a dual phase refrigerant allows for the overall amount of heat transfer to increase since more heat can be exchanged by the fluid.

Regarding claim 28, the combined teachings of Demuth et al, Shohei, and Hirao et al. disclose all the claimed limitations including utilizing two fluids (see Shohei) and having one of the fluids be a refrigerant (see Hirao et al.). It is noted that it would be an obvious mechanical expedient to one of ordinary skill to choose a heat exchange fluid such as refrigerant for either fluid in the heat exchange device, since it is well known that heat exchangers often utilize refrigerant due to its good heat exchange properties.

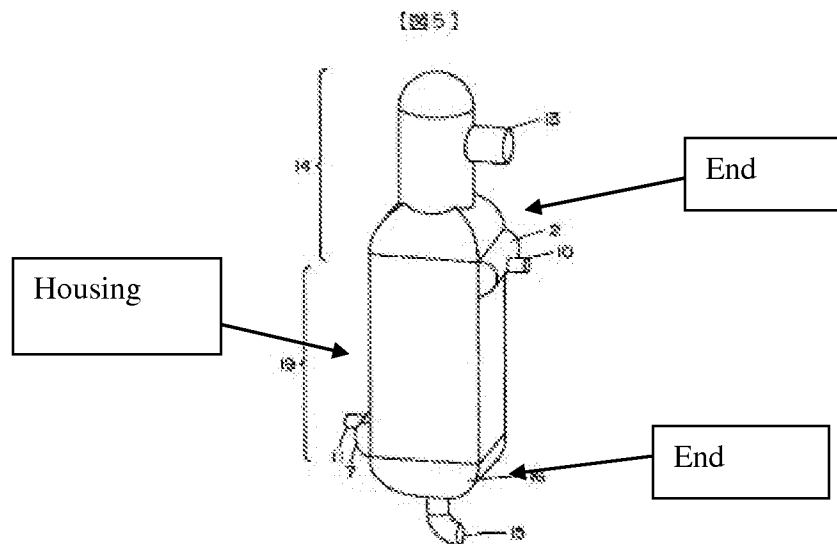
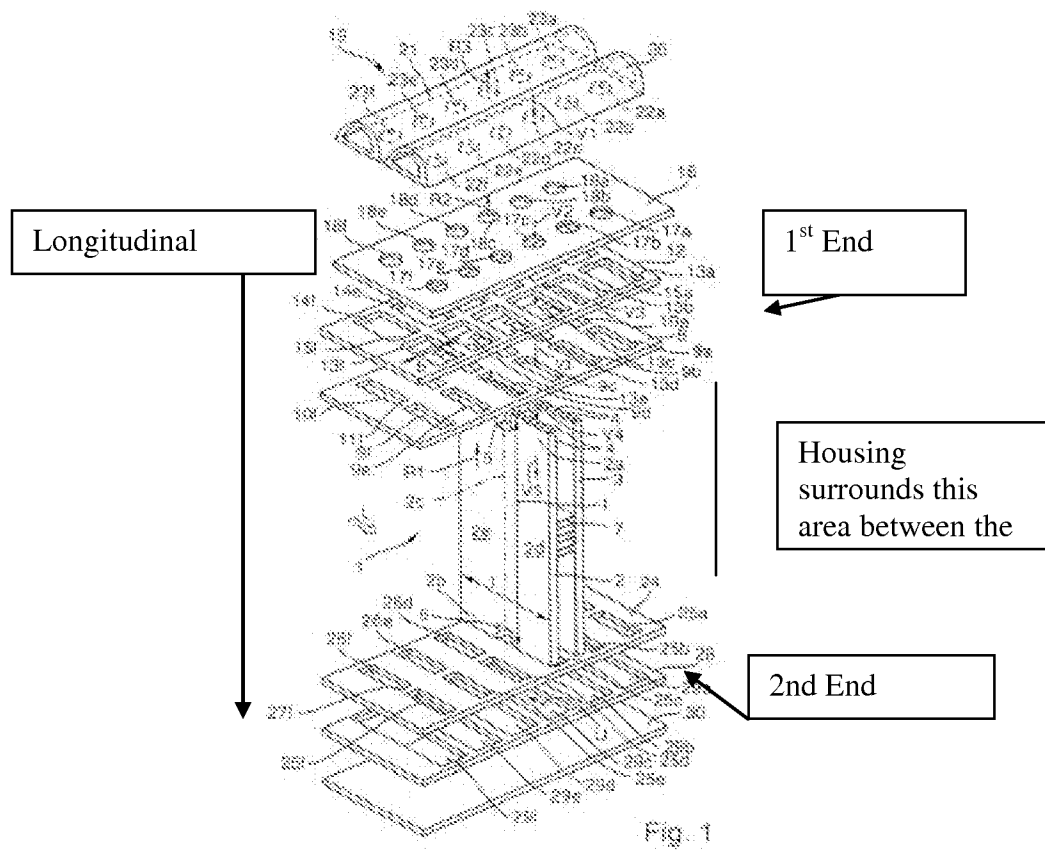
Response to Arguments

8. Applicant's arguments filed 9/30/2010 have been fully considered but they are not persuasive.

In response to applicant's arguments that the claim objection should be withdrawn, the Examiner disagrees. Without the word "the" the claim does not make grammatical sense. Therefore applicant's arguments are not persuasive and the objection is maintained.

In response to applicant's arguments (pages 3 and 4) that the combined teachings of Demuth and Shohei do not disclose a heat exchanger having a first and second end piece and a housing having open ends being closed by the end pieces, the Examiner disagrees. As illustrated in the Figure below, Demuth discloses all the structural features of the claim including the first and second end pieces as indicated below. Shohei as illustrated in Figures 5 and 6 and below, shows a housing that is positioned between two ends 16 and 18. It is obvious that in order to have the housing surround the tubes as shown in the Figures, that the ends must be open. Thus, the combined teachings of Demuth and Shohei disclose all the structural features of the claim and when in combination the open ends of the housing would be closed by the first and second end pieces, just as they are closed by ends (16) and (18) in Shohei. Therefore, the applicant's arguments are unpersuasive and the rejection is maintained.

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In response to applicant's argument (page 4) that there is no teaching, suggestion, or motivation to combine the references, the examiner recognizes that obviousness may be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988), *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992), and *KSR International Co. v. Teleflex, Inc.*, 550 U.S. 398, 82 USPQ2d 1385 (2007). In this case, nothing in Demuth says that a housing can not be placed around the tubes. Further, applicant claims "two mediums," both of which could be gas. Finally, when in combination if air is used as the medium to cool the pipes, the air can still flow through the housing to achieve the cooling, and nothing in the reference precludes this from being achieved. Therefore, the applicant's arguments are unpersuasive and the rejection is maintained.

In response to applicant's arguments (page 5) that the reference does not teach pipes running in a longitudinal direction. In response to applicant's arguments, the examiner disagrees as the combined teachings of Demuth and Shohei discloses pipes running in a longitudinal direction (see Figure above). In the previous action, the Examiner was trying to clarify that although Demuth is not oriented in the same manner as applicant's heat exchanger that the tubes still run in a longitudinal direction. Therefore, the applicant's arguments are unpersuasive and the rejection is maintained.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRANDON M. ROSATI whose telephone number is (571)270-3536. The examiner can normally be reached on Monday-Friday 8:00am- 4:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler can be reached on (571) 272-4834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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12/16/2010

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